

33. The interface of claim 32 wherein the thermally conductive composite further includes a support material, the fibers being in the support material and the encapsulant being on the support material.

34. The interface of claim 33 wherein the support material comprises an adhesive.

 35. A thermal interface comprising:

a plurality of thermally conductive fibers embedded in a support material, the support material having a first surface and a second opposing surface and the fibers having first portions that extend upwardly out of the second opposing surface of the support material;

an encapsulant between the first portions of the fibers and over the support material, the support material, encapsulant, and fibers forming a thermally conductive composite; and

a third surface defining an outermost surface of the thermally conductive composite except for the fiber first portions terminating in tips that are elevationally above the third surface and the encapsulant.

36. The interface of claim 35 wherein the support material comprises an adhesive.

37. A thermally conductive structure, comprising:

a layer of adhesive having a pair of opposing surfaces, the opposing surfaces being a first opposing surface and a second opposing surface;

a plurality of thermally conductive fibers embedded in the adhesive, the fibers having first portions which extend out of the second opposing surface of the layer of adhesive and upwardly from the second opposing surface, the first portions terminating in tips above the second opposing surface of the layer of adhesive, the tips being at a same height above the second opposing surface as one another; the thermally conductive fibers being selected from the group consisting of carbon fibers, metal fibers, and ceramic fibers; and

an encapsulant between the first portions of the fibers and over the adhesive, the tips of the fibers extending to above the encapsulant.

38. The thermally conductive structure of claim 37 wherein the upwardly extending first portions are parallel to one another and perpendicular to the second opposing surface.

39. The thermally conductive structure of claim 37 wherein the thermally conductive fibers are carbon fibers.

40. The thermally conductive structure of claim 37 wherein the encapsulant is on the second opposing surface of the layer of adhesive.

41. The thermally conductive structure of claim 37 wherein the tips are at a same height above the second opposing surface as one another.

~~42.~~ A thermally conductive structure, comprising:

a layer of adhesive having a pair of opposing surfaces, the opposing surfaces being a first opposing surface and a second opposing surface, the first and second surfaces being spaced from one another along a direction defined as a vertical direction;

*B!  
cont.* a plurality of flocked, thermally conductive fibers embedded in the adhesive, the fibers having first portions which extend upwardly out of the second opposing surface of the layer of adhesive in substantially vertical orientation;

an encapsulant between the first portions of the fibers and over the adhesive; and

a third surface defining an outermost surface of the thermally conductive structure except for the fiber first portions terminating in tips above the third surface and the encapsulant.

43. The thermally conductive structure of claim 42 wherein the third surface comprises a surface of the encapsulant.

44. The thermally conductive structure of claim 42 wherein the thermally conductive fibers are carbon fibers.

45. A thermally conductive structure, comprising:

a layer of adhesive having a pair of opposing surfaces, the opposing surfaces being a first opposing surface and a second opposing surface, the first and second surfaces being spaced from one another along a direction defined as a vertical direction;

a plurality of flocked, thermally conductive fibers embedded in the adhesive, the fibers having first portions which extend upwardly out of the second opposing surface of the layer of adhesive in substantially vertical orientation, the fiber first portions terminating in tips above the second opposing surface of the layer of adhesive; and

an encapsulant over the adhesive, between the first portions of the fibers, and beneath free tips of the fibers.

46. A method of making a thermal interface comprising:

combining an encapsulant with a plurality of thermally conductive fibers, individual fibers having a length and the encapsulant having a thickness;

encapsulating a portion of the individual lengths of the plurality of fibers, an average length of the fibers being greater than an average thickness of the encapsulant along an average direction of the fiber lengths; and

forming a thermally conductive composite from the encapsulant and the fibers.

47. The method of claim 46 further comprising applying the fibers into a support material and applying the encapsulant on the support material.

48. A method of making a thermal interface comprising:

embedding a plurality of thermally conductive fibers in a support material, the support material having a first surface and a second opposing surface and the fibers having first portions that extend upwardly out of the second opposing surface of the support material;

applying an encapsulant between the first portions of the fibers and over the support material, the support material, encapsulant, and fibers forming a thermally conductive composite;

forming a third surface defining an outermost surface of the thermally conductive composite except for the fiber first portions terminating in tips that are elevationally above the third surface and the encapsulant.